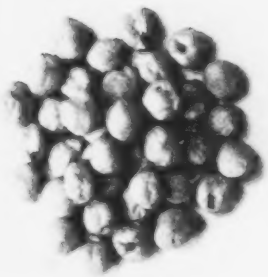
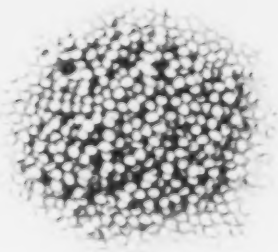
Saskatchewan
Agriculture, Food
and Rural
Revitalization

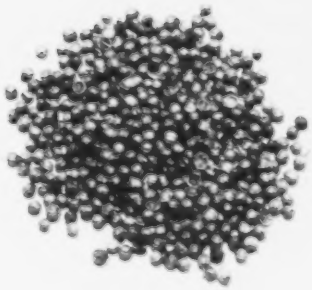
Crop Planning Guide 2003

SPECIALTY CROPS

pulses, oilseeds, spices and other crops







Specialty Crop Planning Guide 2003

Specialty crops are now produced on over 5.5 million acres each year in Saskatchewan. Producers should evaluate the costs and the risks associated with these crops before deciding what to plant in 2003.

The crop budgets in this publication provide an estimate of costs based on recommended production practices for each crop. For some crops, the best production methods are not firmly established and cost estimates are based on reasonable estimates of production systems.

Large variations in yields and costs exist among producers depending on location, farm size, age of machinery, etc. **The budgets presented here should be used as guidelines only.** They do not represent actual costs and returns on your farm. Your past farm records adjusted for expected changes in 2003 can be used to develop your own budgeting figures. Enter estimates for your own farm on the enclosed worksheet.

The cropping budgets are based on either re-cropping or fallow cropping depending on the prevalent cropping practices or agronomic recommendations. Producers seeding a crop in a different rotation should adjust the fallow costs accordingly.

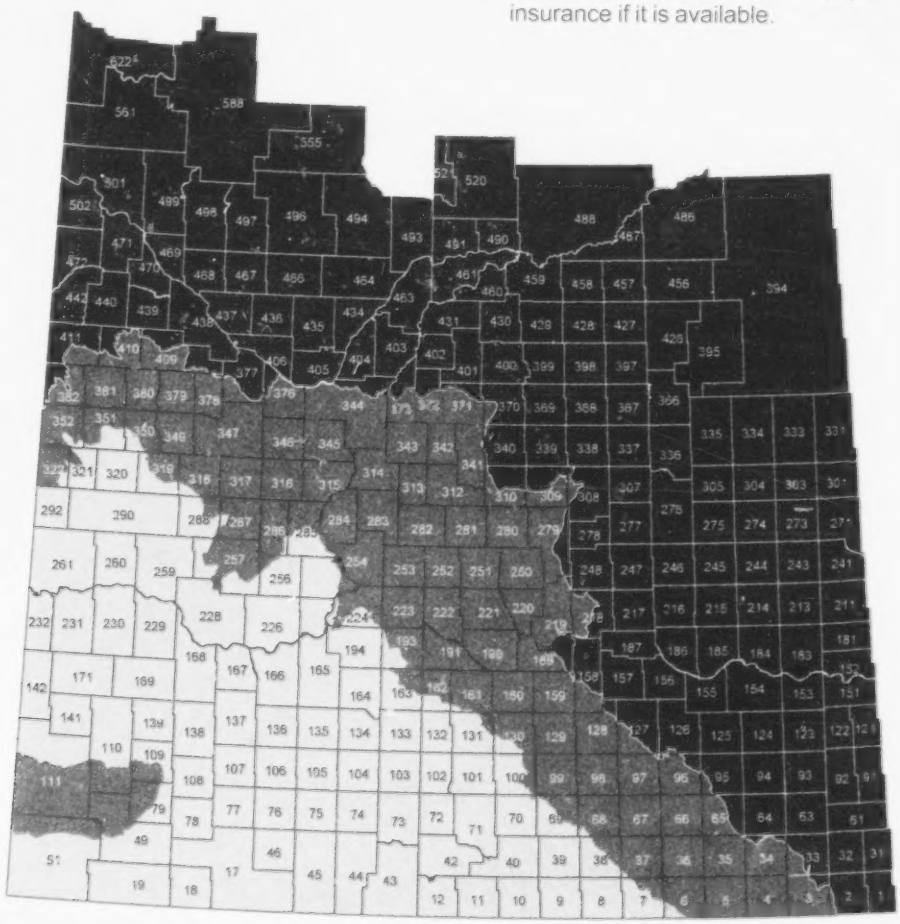
The figures provide an estimate of variable expenses, investment and depreciation on buildings and machinery and a land cost. The yields are based on averages provided by Saskatchewan Agriculture, Food and Rural Revitalization (SAFRR). For crops with insufficient yield history, yields were based on SAFRR Special Crop surveys and data from Saskatchewan's Crop Development Centre. Crop prices are based on historical prices adjusted for anticipated supply and demand.

Short-term decisions among various crops can be made on the basis of returns over variable expenses. Long-term decisions must include all costs, including fixed costs for machinery, buildings and land. The decision to include a new crop in your crop rotation may be longer-term if changes to machinery and buildings requirements are necessary for the new crop.

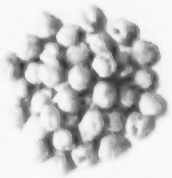
Producers considering replacing some of their traditional crops with new crops should give special consideration to the higher risk associated with specialty crops. Many specialty crops have higher profit potential than traditional crops but also have greater variations in yield, grade and price. Some require an extended growing season, or have particular climate requirements, which could produce very low yields in some years. Markets for some of these crops are small and variable.

Use the following methods to reduce risk:

- Start with a small acreage until production methods have been learned.
- Contract for price and delivery if markets are uncertain.
- Maintain crop diversity by limiting the acreage of a new crop to a reasonable portion of your total acreage.
- Practice the best weed control available.
- Insure against yield loss with crop insurance if it is available.



USING THE SPECIALTY CROP BUDGETS



The relative profitability of crops can be difficult to determine when they are part of a longer-term rotation. Profits are easier to compare based on the net returns per rotation acre, which is the average profit or loss per acre, per year for a particular crop rotation.

Step 1. Adjust the crop budgets for the crops to be compared.

The crop budgets shown in this report are based on estimated costs and returns for each crop. The actual costs and returns on your own farm may be different. You may wish to change costs to suit the conditions on your own farm.

Step 2. Calculate the average returns per rotation acre.

Use the table below to list the different rotations of crops and fallow which you are considering for your farm. Show the complete rotation from the first year to the last year. Use the adjusted crop budgets for your own farm to calculate the average return per rotation acre for various rotations.

CROP ROTATION RETURNS	SOURCE	Example 1 - Specialty Crops BROWN AND DARK BROWN SOIL ZONES			Rotation 1		Rotation 2		Rotation 3	
		Crop[1]	Return over Total Expenses $/acre	Return over Variable Expenses $/acre	Crop	Return $/acre	Crop	Return $/acre	Crop	Return $/acre
Year 1	Brown Soil Zone	Wheat	$22.40	$66.39						
Year 2	Specialty Crops	Kabuli 7mm	$78.68	$128.00						
Year 3	Brown Soil Zone	Barley	$2.49	$46.49						
Year 4	Specialty Crops	Yellow Mustard	$79.91	$123.90						
Year 5	Specialty Crops	Canary Seed	$51.45	$102.25						
Year 6	Specialty Crops	Lentil Large Green	$66.50	$122.62						
Total Returns			$301.43	$589.65						
Total # of years in rotation			6	6						
Return per rotation acre			$50.24	$98.28						

[1] All crops are conventionally seeded.

In this example, both returns over total expenses and returns over variable expenses are calculated. If the average return is negative then the rotation with the smallest negative return would be best.

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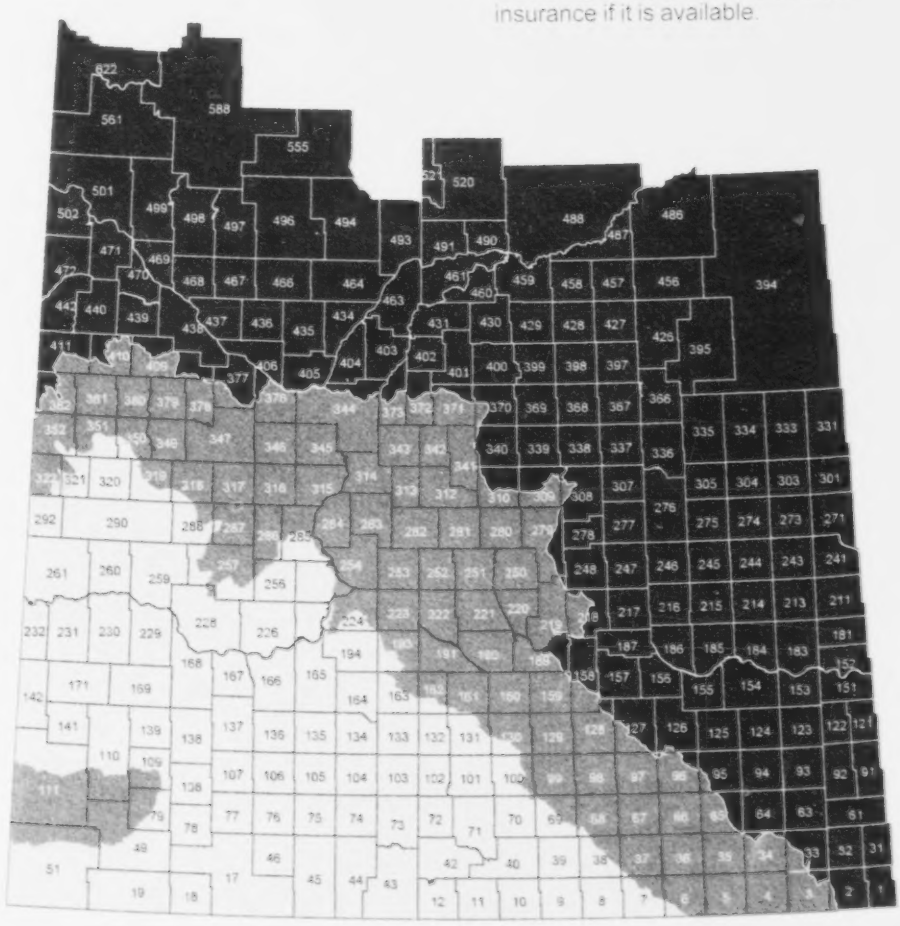
Soil Zones of Southern Saskatchewan

Black

Dark Brown

Brown



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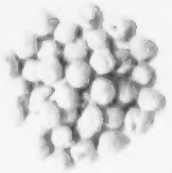

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CROP PRODUCTION COSTS SPECIALTY CROPS	USE THIS WORKSHEET TO ADJUST THE CROP BUDGETS TO YOUR FARM			
Type of rotation				
Rotation years required to grow this crop				
Soil Zone				
REVENUE PER ACRE				
Estimated yield (bushel/acre; lb/acre) X Estimated on-farm market price per bushel or per pound				
A Estimated Gross Revenue per acre				
EXPENSES PER ACRE				
Variable Expenses per acre				
Seed				
Fertilizer: Nitrogen				
Phosphorus				
Sulphur & Other				
Chemical: Herbicides/Fungicides				
Insecticides				
Seed Treatment				
Machinery Operating: Fuel				
Repair				
Custom Work & Hired Labour				
Crop Insurance Premium				
Utilities & Miscellaneous				
Interest on Variable Expenses				
B Total Variable Expenses per acre				
Other Expenses per acre				
Building Repair				
Property Taxes				
Insurance & Licences				
Machinery Depreciation				
Building Depreciation				
Machinery Investment				
Building Investment				
Land Investment				
Total Other Expenses				
+ Labour and Management[1]				
Total Expenses per acre				
+ Summerfallow cost				
C Total Rotational Expense				
RETURNS PER ACRE				
Return over Variable Expenses (A-B)				
Return over Total Rotational Expenses (A-C)				
BREAK-EVEN YIELD PER ACRE				
(per bushel or per pound)[2]				
To Cover Variable Expenses				
To Cover Total Rotational Expenses				
BREAK-EVEN PRICE				
(per bushel or per pound)[2]				
To Cover Variable Expenses				
To Cover Total Rotational Expenses				

[1] These budgets do not include an estimate for owner/operator labour and management. This value varies greatly and depends on both the farm manager's needs as well as the ability of the farm business to generate income. Farm managers need to determine their own actual labour and management cost and add it to total expenses.

[2] The break-even yields and prices for summerfallow crops include the previous years tillage fallow expenses.

Assumptions

Seed including cleaning:

Pulse:

- Large Green lentil 90 lb/ac at $0.37/lb
- Small Green lentil 45 lb/ac at $0.28/lb
- Red lentil 45 lb/ac at $0.24/lb
- Green pea 180 lb/ac at $0.18/lb
- Yellow pea 180 lb/ac at $0.15/lb
- Feed pea 180 lb/ac at $0.12/lb
- Pinto bean 100 lb/ac at $0.40/lb
- Desi Chickpea 95 lb/ac at $0.27/lb
- Kabuli Chickpea 9mm 150 lb/ac at $0.43/lb
- Kabuli Chickpea 7 mm 110 lb/ac at $0.28/lb
- Fababean 180 lb/ac at $0.16/lb.

Oilseed:

- Early Short Sunflower 7 lb/ac at $3.00/lb
- Standard Sunflower 5 lb/ac at $5.63/lb
- Yellow Mustard 10 lb/ac at $0.75/lb
- Oriental Mustard 8 lb/ac at $0.51/lb
- Brown Mustard 10 lb/ac at $0.51/lb
- Safflower 30 lb/ac at $0.30/lb.

Spice and Other Crops:

- Canary seed 35 lb/ac at $0.44/lb
- Buckwheat 50 lb/ac at $0.25/lb
- Caraway 10 lb/ac at $1.22/lb
- Dill 8 lb/ac at $1.09/lb
- Coriander 25 lb/ac at $0.51/lb
- Fenugreek 30 lb/ac at $0.47/lb
- Borage 15 lb/ac at $4.00/lb
- Seed prices used were either an average of common seed and seed grower prices or just seed grower prices.

Fertilizer:

Nitrogen based on 46-0-0 at $303/tonne ($.30 N/lb)

- Black soil zone: 30 lb N/ac fallow and 60 lb N/ac stubble
- Dark Brown soil zone: 25 lb N/ac fallow and 50 lb N/ac stubble
- Brown soil zone: 20 lb N/ac fallow and 45 lb N/ac stubble
- Nitrogen on lentil, pea, chickpea, fababean and fenugreek 6 lb N/ac based on 50 lb of 12-51-0
- Nitrogen on pinto bean 50 lb N/acre.

Phosphorus based on 12-51-0 at $370/tonne ($.26 P/lb)

- All pulse crops 25 lb P/ac fallow and stubble
- Black soil zone 30 lb P/ac fallow and stubble
- Dark Brown soil zone 25 lb P/ac fallow and stubble
- Brown soil zone 20 lb P/ac fallow and stubble

Sulphur based on 20-0-0-24 at $291/tonne ($.29 S/lb)

- Sulphur on mustard at 10 lb S/acre
- Caraway is a three-year crop and sown with a cover crop. In the year of establishment, the fertilizer costs are attributed to the cover crop. In its second and third year, 50 lb of N/ac/year are applied to the crop.

Pesticides:

Herbicides:

- All crops were 100% treated for wild oats where registered except for canary seed which was 25% treated (to be consistent with the soil zone guides)
- Caraway: for wild oat control Poast and Edge are registered. Caraway takes a year to establish therefore, in the first year, chemical costs were applied to the cover crop.
- All crops were 100% treated for broadleaves where registered. As well, no broadleaf application was applied to the mustards to keep consistent with the soil zone guides.
- Fenugreek and Borage: received a pre plant burn off only because no pesticides are registered for use incrop.

Others:

- All crops receive seed treatment or inoculation except dill and borage
- Canary seed: insect control 20%
- Mustard: insect control 10%
- Lentil: fungicide 20%, desiccant 100%
- Pea: desiccant 25% except field pea, which is at 10%
- Pinto Bean: fungicide 75%
- Chickpea:
  - Desi - 50% fungicide
  - Kabuli Large - 100% fungicide, two applications
  - Kabuli Small - 100% fungicide, one application
- Sunflower: insect control 20%.

- **Operating costs** are based on recommended production practices in the respective soil zones.
- **Fuel costs** are based on estimated fuel consumptions for the various farming operations with diesel fuel priced at 47 cents per litre.
- **Machinery repair** rates are 6% of machinery investment per year for pea, lentil, pinto bean, chickpea, fababean, sunflower and safflower and 5% for all other crops.
- **Saskatchewan Crop Insurance** premiums are based on coverage at 70% of Risk Area(s) average yield plus 20%. Not all crops are insurable through Crop Insurance.
- **Building repair** rates are 5% of building investment per acre.
- **Operating interest** is calculated on all cash operating costs at 5.2% for six months on all crops, 18 months for fallow.
- **Machinery Depreciation** is calculated at 10% of machinery investment per year on a straight-line basis.
- **Building depreciation** is based on a specified building investment for each soil zone multiplied by 5% per year on a straight-line basis.
- **Average machinery investment** is calculated for each soil zone. An additional machinery investment of $35 per seeded acre is assumed for most crops in this guide due to their specialized nature.
- **Investment cost** on building and machinery investment is calculated at an interest rate of 5.2% on the investment per acre.
- **Land investment cost** is based on average land values in each soil zone multiplied by 4.5% as a return on investment.
- **Crop prices** for 2003 production are farmgate price estimates for 2003 crop production, provided by Saskatchewan Agriculture, Food and Rural Revitalization in December 2002.
- **Crops** that appear in both the *Crop Planning Guides* and the *Specialty Crops Guide* that share the same soil zone and are continuous cropped have their yields averaged between Saskatchewan Agriculture, Food and Rural Revitalization's 10 year averages and Saskatchewan Crop Insurance yields plus 20% values. These crops are laird lentil (dark brown soil zone), feed pea (black soil zone), brown mustard (brown soil zone) and canary seed (dark brown soil zone).
- **Labour and management** - These budgets do not include an estimate for owner/operator labour and management. This value varies greatly and farm managers need to determine their own actual labour and management cost.

For more information contact:
Your Extension Agrologist or the Crop Development Branch of Saskatchewan Agriculture, Food and Rural Revitalization
Telephone (306) 787-4660
Revised December 2002

This information is on Saskatchewan Agriculture, Food and Rural Revitalization's website along with most other publications that are produced by Saskatchewan Agriculture, Food and Rural Revitalization.

Website Address:
http://www.agr.gov.sk.ca

SPECIALTY CROP HIGHLIGHTS	Type	lb/ bushel	Adaptation	Seed Rate lb/acre	Seeds/lb	Weed Control	Crop Height (inches)
Large Green Lentil	Annual pulse	60	Indeterminate crop, requires some stress to mature seed. Seed early.	90	5,000-7,000	Several registered herbicides.	16-20
Small Green Lentil	Annual pulse	60	Requires some stress to mature seed. More determinate than Large Green. Seed early.	45	11,000-13,500	Several registered herbicides.	12-16
Red Lentil	Annual pulse	60	Requires some stress to mature seed. More determinate than large Green. Seed early.	45	11,000-13,500	Several registered herbicides.	12-16
Green Pea	Annual pulse	60	Prefers most, cool conditions. Seed early.	150-200	1,600-2,300	Several registered herbicides.	20-30
Yellow Pea	Annual pulse	60	Prefers moist, cool conditions. Seed early.	150-200	1,300-2,300	Several registered herbicides.	20-43
Feed Pea	Annual pulse	60	Prefers moist, cool conditions. Seed early.	120-180	1,300-2,300	Several registered herbicides.	20-43
Pinto Bean narrow row & dryland	Annual pulse	60	Heat and moisture loving. Seed in late May. No frost tolerance.	80-140	1,100-1,600	Several registered herbicides. Seed treatment recommended.	12-20
Desi Chickpea	Annual pulse	60	Indeterminate crop, Brown and Dark Brown soils.	80-90	1,350-2,300	Sencor, Poast and Select herbicides are registered. Use clean fields.	12-20
Kabuli Chickpea 9mm	Annual pulse	60	Indeterminate crop, Brown soils. Seed after soil reaches 10°C at seeding depth.	120-180	1,100-2,000	Sencor, Poast and Select herbicides are registered. Use clean fields. Seed treatment recommended.	14-20
Kabuli Chickpea 7mm				100-110	1,200-2,200		14-20
Fababean	Annual pulse	60	High moisture areas or irrigation.	120-180	800-1,350	Numerous herbicides registered.	40-60
Safflower	Annual oilseed or birdseed	40	High heat requirements. Brown and Dark Brown soil zones.	22-30	4,500-5,500	Trifluralin, Edge and Poast are registered herbicides.	20-30
Standard Sunflower	Annual oilseed	30	High heat requirements. South-east Saskatchewan.	5	4,500-6,800	Trifluralin, Edge and Select are registered herbicides.	60
Early Short Statured Sunflower	Annual oilseed	30	Moderate heat requirements. Brown, Dark Brown and thin Black soils.	7-10	11,000-13,500	Trifluralin, Edge and Select are registered herbicides.	24-35
Yellow Mustard	Annual oilseed	50	Better seed quality in drier areas.	9-12	100,000	Several registered herbicides.	30-40
Brown Mustard	Annual oilseed	50	More heat and drought tolerant than canola.	7-10	200,000	Several registered herbicides.	40-48
Oriental Mustard	Annual oilseed	50	More heat and drought tolerant than canola.	5-9	200,000	Several registered herbicides.	40-48
Fenugreek	Annual legume	60	Indeterminate crop. Brown and Dark Brown soil zones. Late maturing.	22-30	23,000-27,000	No registered herbicides. Use clean fields.	12-24
Buck wheat	Annual grain	48	Widely adapted but sensitive to frost anytime and heat and drought during seed set.	35-55	13,000-16,000	Several herbicides registered for grassy weed control.	40-60
Canary Seed	Annual birdseed	50	Moderate moisture requirements, shallow rooted.	22-35	65,000	Several herbicides registered.	40-60
Borage	Annual oilseed	34	Moisture loving, seed late to increase GLA content of the oil.	9-15	13,500 (est.)	No registered herbicides. Use clean fields.	24-40
Dill	Annual spice	27	Yields best in cool conditions, moderate moisture.	5-9	90,000 (est.)	Poast and Edge are registered herbicides.	40
Caraway	Biennial spice	35	Widely adapted, yields best under moderate moisture.	10	90,000 (est.)	Poast, Linuron and Edge are registered.	12-28
Coriander	Annual spice	22	Heat loving, late maturing.	25	50,000	Poast, Linuron and Edge are registered.	24-40

Days to Maturity	Harvest Method	Safe Storage Moisture	Crop Quality Factors	Markets	Expected Yield (lb/acre)
53 days to flower	Swath or desiccate and direct combine. Pick-up reels, floating cutter bar preferred.	Below 14%	Light green seed.	Human food	900-1200
49 days to flower	Swath or desiccate and direct combine. Pick-up reels, floating cutter bar preferred.	Below 14%	Light green seed.	Human food	1000-1400
49 days to flower	Swath or desiccate and direct combine. Pick-up reels, floating cutter bar preferred.	Below 14%	Red seed, smaller than large green lentil. Seed colour grading factors are different than green lentil.	Human food	1000-1300
92-98	Swath or desiccate and direct combine. Pick-up reels and lifters preferred.	Below 16%	Uniform green seed free from damage. Less than 5% bleached.	Human food or feed	1250-2000
93-104	Swath or desiccate and direct combine. Pick-up reels and lifters preferred.	Below 16%	Large round smooth yellow seed free from damage.	Human food or feed	1250-2400
93-104	Swath or desiccate and direct combine. Pick-up reels and lifters preferred.	Below 16%	Various sizes and colours.	Feed	1250-2400
95-112	Pick-up reel and floating cutter bar required. Swathing preferred. Swath when tough.	14%-16%	Sound whole seed, avoid seed damage.	Human food	900-1450 dryland
110-120	Direct combine or swath and combine.	Below 14%	Sound whole seed, avoid seed damage.	Human food	1050-1450
110-125	Direct combine or swath and combine.	Below 14%	Sound whole seed, avoid seed damage. Light coloured seed coat and green cotyledons.	Human food	900-1300
110-120					1000-1400
125-135	Swath and combine.	Below 16%	Avoid splitting and cracking.	High protein feed	1000-1600
115-125	Direct combine preferred.	Below 9.5%	Bright white for birdseed, well filled.	Birdseed or edible oil	600-750
110-125	Direct combine with sunflower attachment.	Below 10%	Premiums for high oil content.	Edible oil and confection	700-1000
99-103	Swath and combine or direct combine with standard equipment.	Below 10%	Premiums for high oil content.	Edible oil and birdseed	700-1000
93	Direct combine or swath and combine.	Below 9.5%	Bright yellow seed.	Condiment	550-700
94	Swath and combine.	Below 9.5%	Dark reddish brown seed.	Condiment	620-900
91-93	Swath and combine.	Below 9.5%	Bright golden seed.	Condiment	620-900
115-130	Resists shattering, direct combine or swath and combine.	Below 12%	Golden coloured seed.	Spice ingredient, pharmaceutical, health food	550-900
80-90	Swath when 75% mature.	Below 16%	Tan coloured seed, do not mix old (reddish-brown dehulled) and new (greenish dehulled) crop.	Whole seed	550-700
95-100	Swath and combine or direct combine. Shatter resistant.	Below 13%	Avoid dehulling seed.	Birdseed	700-1050
85	Ripens unevenly, shatters most of the seed, swath.	Below 10%	Avoid volunteer cereal crops which are difficult to separate.	Oil extracted for neutraceutical	90-200
105-115	Swath and combine.	Below 10%	Clean seed, oil content.	Flavouring	270-1000
Biennial matures in early August	Swath when begins to shatter.	Below 10%	Brown with dark stripes. Avoid green seed.	Flavouring	450-700
95-110	Direct combine or swath then immediately combine.	Below 10%	Fully mature brown seeds, splits below 5%.	Flavourings and perfumes	550-800

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Yellow Pea	Annual pulse	60	Prefers moist, cool conditions. Seed early.	150-200	1,300-2,300	Several registered herbicides.	20-43
Feed Pea	Annual pulse	60	Prefers moist, cool conditions. Seed early.	120-180	1,300-2,300	Several registered herbicides.	20-43
Pinto Bean narrow row & dryland	Annual pulse	60	Heat and moisture loving. Seed in late May. No frost tolerance.	80-140	1,100-1,600	Several registered herbicides. Seed treatment recommended.	12-20
Desi Chickpea	Annual pulse	60	Indeterminate crop. Brown and Dark Brown soils.	80-90	1,350-2,300	Sencor, Poast and Select herbicides are registered. Use clean fields.	12-20
Kabuli Chickpea 9mm	Annual pulse	60	Indeterminate crop. Brown soils. Seed after soil reaches 10°C at seeding depth.	120-180	1,100-2,000	Sencor, Poast and Select herbicides are registered. Use clean fields. Seed treatment recommended.	14-20
Kabuli Chickpea 7mm				100-110	1,200-2,200		14-20
Fababean	Annual pulse	60	High moisture areas or irrigation.	120-180	800-1,350	Numerous herbicides registered.	40-60
Safflower	Annual oilseed or birdseed	40	High heat requirements. Brown and Dark Brown soil zones.	22-30	4,500-5,500	Trifluralin, Edge and Poast are registered herbicides.	20-30
Standard Sunflower	Annual oilseed	30	High heat requirements. South-east Saskatchewan.	5	4,500-6,800	Trifluralin, Edge and Select are registered herbicides.	60
Early Short Statured Sunflower	Annual oilseed	30	Moderate heat requirements. Brown, Dark Brown and thin Black soils.	7-10	11,000-13,500	Trifluralin, Edge and Select are registered herbicides.	24-35
Yellow Mustard	Annual oilseed	50	Better seed quality in drier areas.	9-12	100,000	Several registered herbicides.	30-40
Brown Mustard	Annual oilseed	50	More heat and drought tolerant than canola.	7-10	200,000	Several registered herbicides.	40-48
Oriental Mustard	Annual oilseed	50	More heat and drought tolerant than canola.	5-9	200,000	Several registered herbicides.	40-48
Fenugreek	Annual legume	60	Indeterminate crop. Brown and Dark Brown soil zones. Late maturing.	22-30	23,000-27,000	No registered herbicides. Use clean fields.	12-24
Buck wheat	Annual grain	48	Widely adapted but sensitive to frost anytime and heat and drought during seed set.	35-55	13,000-16,000	Several herbicides registered for grassy weed control.	40-60
Canary Seed	Annual birdseed	50	Moderate moisture requirements, shallow rooted.	22-35	65,000	Several herbicides registered.	40-60
Borage	Annual oilseed	34	Moisture loving, seed late to increase GLA content of the oil.	9-15	13,500 (est.)	No registered herbicides. Use clean fields.	24-40
Dill	Annual spice	27	Yields best in cool conditions, moderate moisture.	5-9	90,000 (est.)	Poast and Edge are registered herbicides.	40
Caraway	Biennial spice	35	Widely adapted, yields best under moderate moisture.	10	90,000 (est.)	Poast, Linuron and Edge are registered.	12-28
Coriander	Annual spice	22	Heat loving, late maturing.	25	50,000	Poast, Linuron and Edge are registered.	24-40

Days to Maturity	Harvest Method	Safe Storage Moisture	Crop Quality Factors	Markets	Expected Yield (lb/acre)
53 days to flower	Swath or desiccate and direct combine. Pick-up reels, floating cutter bar preferred.	Below 14%	Light green seed.	Human food	900-1200
49 days to flower	Swath or desiccate and direct combine. Pick-up reels, floating cutter bar preferred.	Below 14%	Light green seed.	Human food	1000-1400
49 days to flower	Swath or desiccate and direct combine. Pick-up reels, floating cutter bar preferred.	Below 14%	Red seed, smaller than large green lentil. Seed colour grading factors are different than green lentil.	Human food	1000-1300
92-98	Swath or desiccate and direct combine. Pick-up reels and lifters preferred.	Below 16%	Uniform green seed free from damage. Less than 5% bleached.	Human food or feed	1250-2000
93-104	Swath or desiccate and direct combine. Pick-up reels and lifters preferred.	Below 16%	Large round smooth yellow seed free from damage.	Human food or feed	1250-2400
93-104	Swath or desiccate and direct combine. Pick-up reels and lifters preferred.	Below 16%	Various sizes and colours.	Feed	1250-2400
95-112	Pick-up reel and floating cutter bar required. Swathing preferred. Swath when tough.	14%-16%	Sound whole seed, avoid seed damage.	Human food	900-1450 dryland
110-120	Direct combine or swath and combine.	Below 14%	Sound whole seed, avoid seed damage.	Human food	1050-1450
110-125	Direct combine or swath and combine.	Below 14%	Sound whole seed, avoid seed damage. Light coloured seed coat and green cotyledons.	Human food	900-1300
110-120					1000-1400
125-135	Swath and combine.	Below 16%	Avoid splitting and cracking.	High protein feed	1000-1600
115-125	Direct combine preferred.	Below 9.5%	Bright white for birdseed, well filled.	Birdseed or edible oil	600-750
110-125	Direct combine with sunflower attachment.	Below 10%	Premiums for high oil content.	Edible oil and confection	700-1000
99-103	Swath and combine or direct combine with standard equipment.	Below 10%	Premiums for high oil content.	Edible oil and birdseed	700-1000
93	Direct combine or swath and combine.	Below 9.5%	Bright yellow seed.	Condiment	550-700
94	Swath and combine.	Below 9.5%	Dark reddish brown seed.	Condiment	620-900
91-93	Swath and combine.	Below 9.5%	Bright golden seed.	Condiment	620-900
115-130	Resists shattering, direct combine or swath and combine.	Below 12%	Golden coloured seed.	Spice ingredient, pharmaceutical, health food	550-900
80-90	Swath when 75% mature.	Below 16%	Tan coloured seed, do not mix old (reddish-brown dehulled) and new (greenish dehulled) crop.	Whole seed	550-700
95-100	Swath and combine or direct combine. Shatter resistant.	Below 13%	Avoid dehulling seed.	Birdseed	700-1050
85	Ripens unevenly, shatters most of the seed, swath.	Below 10%	Avoid volunteer cereal crops which are difficult to separate.	Oil extracted for neutraceutical	90-200
105-115	Swath and combine.	Below 10%	Clean seed, oil content.	Flavouring	270-1000
Biennial matures in early August	Swath when begins to shatter.	Below 10%	Brown with dark stripes. Avoid green seed.	Flavouring	450-700
95-110	Direct combine or swath then immediately combine.	Below 10%	Fully mature brown seeds, splits below 3".	Flavourings and perfumes	550-800

CROP PRODUCTION COSTS ($/ACRE) SPECIALTY CROPS

	PULSE CROPS									
CROP	#1 Large Green Lentil	#1 Small Green Lentil	#1 Red Lentil	#1 Green Pea	#1 Yellow Pea	Feed Pea	Pinto Bean*	#1 Desi Chickpea	#1 9mm Kabuli C'pea	#1 7mm Kabuli C'p
Type of Rotation	Re-crop	Re-crop	Re-crop	Re-crop	Re-crop	Re-crop	Fallow	Re-crop	Re-crop	Re-crop
Rotation Years Required to Grow This Crop	1	1	1	1	1	1	2	1	1	1
Soil Zone	DBROWN	DBROWN	DBROWN	BLACK	BLACK	BLACK	DBROWN	BROWN	BROWN	BROWN
REVENUE PER ACRE										
Estimated Yield (bu/ac,lb/ac) (A)	1215.00	1266.00	1284.00	29.2	30.8	29.8	1000.00	1400.00	1100.00	1400.00
Est. On Farm Market Price/bus,lb (B)	$0.20	$0.17	$0.17	$5.92	$5.42	$4.02	$0.24	$0.17	$0.26	$0.18
Estimated Gross Revenue/ac (AxB) (C)	243.00	215.22	218.28	172.86	166.94	119.80	240.00	238.00	286.00	252.00
EXPENSES PER ACRE										
Variable Expenses/acre										
Seed	33.30	12.60	10.80	32.40	27.00	21.60	40.00	25.65	64.50	30.80
Fertilizer - Nitrogen	1.80	1.80	1.80	1.80	1.80	1.80	15.00	1.80	1.80	1.80
- Phosphorus	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
- Sulphur & Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemical*** - Herbicides/Fungicides	34.77	34.77	34.77	21.49	21.49	19.49	63.19	26.98	49.74	34.57
- Insecticides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Seed Treatment	1.80	0.90	0.90	3.60	3.60	3.60	1.58	1.90	10.50	7.70
Machinery Operating - Fuel	10.34	10.34	10.34	10.34	10.34	10.34	8.93	10.34	10.34	10.34
- Repair	12.06	12.06	12.06	13.50	13.50	13.50	12.06	10.74	10.74	10.74
Custom Work & Hired Labour	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Crop Insurance Premium	9.51	9.42	9.06	3.85	3.85	3.85	0.00	10.48	13.72	12.54
Utilities & Miscellaneous	4.25	4.25	4.25	4.32	4.32	4.32	4.25	2.87	2.87	2.87
Interest on Variable Expenses	3.05	2.49	2.43	2.62	2.48	2.29	4.02	2.61	4.52	3.14
Total Variable Expenses (D)	120.38	98.13	95.91	103.42	97.88	90.29	158.53	102.87	178.23	124.00
Other Expenses/acre										
Building Repair	1.20	1.20	1.20	1.60	1.60	1.60	1.20	0.90	0.90	0.90
Property Taxes	4.81	4.81	4.81	5.36	5.36	5.36	4.81	4.24	4.24	4.24
Insurance & Licences	1.81	1.81	1.81	2.14	2.14	2.14	1.81	1.18	1.18	1.18
Machinery Depreciation	20.10	20.10	20.10	22.50	22.50	22.50	20.10	17.90	17.90	17.90
Building Depreciation	1.20	1.20	1.20	1.60	1.60	1.60	1.20	0.90	0.90	0.90
Machinery Investment	10.45	10.45	10.45	11.70	11.70	11.70	10.45	9.31	9.31	9.31
Building Investment	1.25	1.25	1.25	1.66	1.66	1.66	1.25	0.94	0.94	0.94
Land Investment	15.30	15.30	15.30	17.33	17.33	17.33	15.30	13.95	13.95	13.95
Total Other Expenses (E)	56.12	56.12	56.12	63.89	63.89	63.89	56.12	49.31	49.31	49.31
Labour and Management**** (F)										
Total Expenses (D+E+F) (G)	176.50	154.25	152.03	167.32	161.78	154.18	214.65	152.19	227.54	173.32
Summerfallow Cost (H)	0.00	0.00	0.00	0.00	0.00	0.00	51.86	0.00	0.00	0.00
Total Rotation Expense (G+H)=(I)	176.50	154.25	152.03	167.32	161.78	154.18	266.51	152.19	227.54	173.32
RETURNS PER ACRE										
Return Over Variable Expenses (C-D)	122.62	117.09	122.37	69.44	69.05	29.51	81.47	135.13	107.77	128.00
Return Over Total Rotation Expenses (C-I)	66.50	60.97	66.25	5.55	5.16	-34.39	-26.51	85.81	58.46	78.68
BREAK-EVEN YIELD (lbs or bus per acre)										
To Cover Variable Expenses	602	577	564	17	18	22	661	605	685	689
To Cover Total Rotation Expenses	883	907	894	28	30	38	1110	895	875	963
BREAK-EVEN PRICE (per lb or bus)										
To Cover Variable Expenses	0.10	0.08	0.07	3.54	3.18	3.03	0.16	0.07	0.16	0.09
To Cover Total Rotation Expenses	0.15	0.12	0.12	5.73	5.25	5.17	0.27	0.11	0.21	0.12

* Yield and cost are for Dryland Pinto Bean only.

** Expenses shown are for two years (year 1 and year 2) and revenue is from 2 years (year 2 and year 3) of Caraway seed production. Average return per year over total expenses is $294.47 divided by 2 equals $147.24 per year. The expenses associated with the cover crop in year 1 are covered by the revenue from the cover crop.

*** Only registered chemicals are included.

**** These budgets do not include an estimate for owner/operator labour and management. This value varies greatly and depends on both the farm manager's needs as well as the ability of the farm to generate income. Farm managers need to determine their own actual labour and management costs and add it to total expenses.

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	OILSEED CROPS						SPICE AND OTHER CROPS						
Fababean (Feed)	Early,Short Sunflower	Standard Sunflower	Yellow Mustard	Oriental Mustard	Brown Mustard	Safflower	Canary Seed	Buckwheat	Caraway**	Dill	Coriander	Fenugreek	Borage
Re-crop	Re-crop	Re-crop	Re-crop	Re-crop	Re-crop	Fallow	Re-crop	Fallow	Re-crop	Fallow	Re-crop	Fallow	Fallow
1	1	1	1	1	1	2	1	2	3	2	1	2	2
BLACK	DBROWN	DBROWN	BROWN	BROWN	BROWN	BROWN	DBROWN	DBROWN	DBROWN	BLACK	DBROWN	BROWN	DBROWN
1334.00	925.00	1017.00	695.00	843.00	790.00	671.00	940.00	609.00	550.00	800.00	748.00	800.00	178.00
$0.09	$0.17	$0.21	$0.30	$0.20	$0.20	$0.15	$0.20	$0.11	$0.53	$0.40	$0.27	$0.22	$1.85
120.06	157.25	213.57	208.50	168.60	158.00	100.65	188.00	66.99	**583.00	320.00	201.96	176.00	329.30
28.80	21.00	28.15	7.50	4.08	5.10	9.00	15.40	12.50	2.20	8.72	12.75	14.10	60.00
1.80	15.00	15.00	13.50	13.50	13.50	6.00	15.00	7.50	30.00	9.00	15.00	1.80	7.50
6.50	6.50	6.50	5.20	5.20	5.20	5.20	6.50	6.50	6.50	7.80	6.50	5.20	6.50
0.00	0.00	0.00	2.90	2.90	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37.51	24.22	24.22	16.75	16.75	16.75	16.73	11.54	14.23	54.21	13.67	33.58	3.34	3.34
0.00	0.57	0.57	0.39	0.39	0.39	0.00	1.15	0.00	0.00	0.00	0.00	0.00	0.00
7.20	0.21	0.15	7.30	5.84	7.30	0.60	1.05	1.50	0.30	0.00	0.75	1.50	0.00
10.34	10.34	10.34	9.87	9.87	9.87	7.99	9.40	8.93	18.80	7.99	9.40	7.99	7.99
11.40	10.68	11.16	7.20	7.20	7.20	9.24	8.30	8.30	17.60	9.50	9.30	7.70	7.70
3.00	4.00	4.00	3.50	3.50	3.50	3.00	5.25	3.00	6.00	3.00	3.00	3.00	3.00
4.56	3.32	4.04	5.48	3.89	4.19	0.00	5.73	0.00	23.62	0.00	6.86	0.00	0.00
4.32	4.25	4.25	2.87	2.87	2.87	2.87	4.25	4.25	8.50	4.32	4.25	2.87	4.25
3.00	2.60	2.82	2.14	1.98	2.05	1.58	2.17	1.73	6.16	1.66	2.64	1.24	2.61
118.43	102.69	111.20	84.60	77.96	80.81	62.20	85.75	68.44	183.89	65.67	104.03	48.74	102.89
1.60	1.20	1.20	0.90	0.90	0.90	0.90	1.20	1.20	2.40	1.60	1.20	0.90	1.20
5.36	4.81	4.81	4.24	4.24	4.24	4.24	4.81	4.81	9.62	5.36	4.81	4.24	4.81
2.14	1.81	1.81	1.18	1.18	1.18	1.18	1.81	1.81	3.62	2.14	1.81	1.18	1.81
19.00	17.80	18.60	14.40	14.40	14.40	15.40	16.60	16.60	35.20	19.00	18.60	15.40	15.40
1.60	1.20	1.20	0.90	0.90	0.90	0.90	1.20	1.20	2.40	1.60	1.20	0.90	1.20
9.88	9.26	9.67	7.49	7.49	7.49	8.01	8.63	8.63	18.30	9.88	9.67	8.01	8.01
1.66	1.25	1.25	0.94	0.94	0.94	0.94	1.25	1.25	2.50	1.66	1.25	0.94	1.25
17.33	15.30	15.30	13.95	13.95	13.95	13.95	15.30	15.30	30.60	17.33	15.30	13.95	15.30
58.57	52.62	53.84	43.99	43.99	43.99	45.51	50.80	50.80	104.64	58.57	53.84	45.51	48.98
177.01	155.32	165.04	128.59	121.95	124.80	107.72	136.55	119.24	288.53	124.24	157.87	94.25	151.87
0.00	0.00	0.00	0.00	0.00	0.00	43.00	0.00	51.86	0.00	58.53	0.00	43.00	51.86
177.01	155.32	165.04	128.59	121.95	124.80	150.72	136.55	171.10	288.53	182.77	157.87	137.25	203.73
1.63	54.56	102.37	123.90	90.64	77.19	38.45	102.25	-1.45	399.11	254.33	97.93	127.26	226.41
-56.95	1.93	48.53	79.91	46.65	33.20	-50.07	51.45	-104.11	**294.47	137.23	44.09	38.75	125.57
1316	604	530	282	390	404	415	429	622	173	164	385	222	56
1967	914	786	429	610	624	1005	683	1555	272	457	585	624	110
0.09	0.11	0.11	0.12	0.09	0.10	0.09	0.09	0.11	0.17	0.08	0.14	0.06	0.58
0.13	0.17	0.16	0.19	0.14	0.16	0.22	0.15	0.28	0.26	0.23	0.21	0.17	1.14

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ISSN 08840-9447 14M CD 11